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THE
HOME ECONOMY
HAND BOOK



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Home Economy
Handbook

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By
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The Home Economy Handbook



The purpose of The Home Economy Handbook is to tell you how you may provide the proper amount of nourishment for your family at the least possible cost.

In recent years scientists have discovered a number of important facts about the nutrition of the body.

These facts tell us just what food elements are required by the body, how much of each of the elements is necessary to properly nourish the body, and in what foods we may find these elements at the least cost.

But the important facts have been so mixed up with a great mass of unimportant information that it has been all but impossible for the average man to find the few facts he must have before he can efficiently nourish his body with the least cost.

It is to make these few essential facts available to the average man that this handbook is published.

By use of the information contained herein, the food bills of the average family can be cut two to five dollars per month for each grown member of the family, and proportionately for children. And this can be done without lowering in any way the nourishment values of the food, and with very little, if any, lessening of its palatability.

INDEX

PART 1—The Human Engine.....	5
The Secret of Food Economy.....	6
Body Repairs — Protein.....	6
Body Fuels — Fats and Carbohydrates.....	7
The Calory	8
Table 1—Composition of Food Materials.....	9
PART 2—Cheap Protein Foods.....	10
Table 2—Protein Values of Foods.....	11
Soy Beans	12
Table 3—Saving by Use of Soy Beans.....	13
Soy Bean Recipes	13
Cowpeas	16
Table 4—Saving by Use of Cowpeas.....	16
Cowpea Recipes	16
Navy Beans.....	17
Table 5—Saving by Use of Navy Beans.....	18
Navy Bean Recipes	18
The Peanut.....	18
Skim Milk.....	18
Table 6—Saving by Use of Skim Milk.....	19
Skim Milk Recipes.....	19
Fermented Milks.....	21
Cottage Cheese	23
Economy in the Use of Meats.....	24
Making Tough Meats Tender.....	24
Improving the Flavor of Meats.....	28
How to Use Meat Scraps.....	29
PART 3—Cheap Fuel Foods.....	31
Table 7—Energy (Fuel) Values of Foods.....	32
Breakfast Food Economy	33
Table 8—Food Values of Breakfast Cereals.....	33
Home Made Breakfast Cereals.....	34
How to Save Bread.....	36
Special Preparations of Whole Cereals.....	39
Home Made Cereal Coffee	41
Home Made Cooking Compound	42
PART 4—A Home Made Fireless Cooker.....	46

Part One

The Human Engine

First you must get this idea clearly: **The human body is an engine.**

That is, it is a producer of power, exactly as the steam engine is a producer of power.

If you have difficulty in seeing that the human body produces power, consider this fact: A mountain climber can, in a dozen hours of climbing, lift his own body from sea level to the top of Mt. Rainier, nearly 15,000 feet high. Now, lift a fifty-pound sack of flour from the floor onto the kitchen table. You use power. Our mountain climber, if he weighs 200 pounds, uses twenty-four thousand times that much power in climbing to the top of Mt. Rainier—and all that power was produced by his own body.

Now, in order to understand the human body as an engine (as a producer of power) we must consider certain things about the steam engine.

To enable the steam engine to exert its great power day after day it must be supplied with four things: **Repairs, fuel, lubricants (oil and grease), and water.**

Now note carefully some interesting facts: Repairs are made of the same material as the engine. For fuel, many different things may be used: crude oil, coal, wood, or one might use even costly mahogany, and get excellent results thereby, but at a very great cost.

The secret of fuel economy is to use that fuel which produces the greatest amount of power per dollar of cost.

Now consider the human engine:

If it is to do its work day after day it must have the same four things required by the steam engine—

1. Repairs;
2. Fuel;
3. Lubricants;
4. Water.

Repairs. As with the steam engine, repairs for the body are made of the same material as the body, and to get this material we must eat foods that contain it.

THE HOME ECONOMY HANDBOOK

Fuels. For the body fuel many different foods may be used, and these vary greatly in cost.

(Because water and body lubricants cost very little, and therefore offer no chance to save on their cost, this handbook will have but little to say of them.)

BODY REPAIRS AND BODY FUELS

The human engine, like the steam engine, must have repairs to keep it in order, and fuels to supply energy.

THE SECRET OF FOOD ECONOMY IS TO SELECT THOSE FOODS WHICH PROVIDE THE PROPER AMOUNT OF REPAIR MATERIAL AND THE PROPER AMOUNT OF FUEL MATERIAL AT THE LEAST COST.

THE HOME ECONOMY HANDBOOK TELLS YOU HOW TO DO THIS, AND THUS MAKES IT POSSIBLE FOR YOU TO SAVE FROM TWO TO FIVE DOLLARS PER MONTH FOR EVERY GROWN MEMBER OF THE FAMILY.

Body Repairs

Since the body muscles are constantly wearing out, they must have repairs, and these repairs must be of the same material as the muscles.

Now, the muscular part of the body is composed of a certain substance that scientists call protein (pronounced pro'-te-in). To keep the body in repair we must eat a certain amount of foods that contain protein.

A man at moderately light labor requires about $3\frac{1}{3}$ ounces (about 1/5 lb.) of protein daily.

THE HOME ECONOMY HANDBOOK

Protein is the most expensive food. The following foods contain large amounts of protein: The flesh of animals, milk, eggs, beans and peas.

Protein can also be used as a body fuel, but should not be, since other fuel foods are far less expensive.

Protein costs more in some foods than in others, and by careful study we may select those foods which supply the needed amount of protein at the lowest possible cost.

Protein food costs, then, may be cut in two ways:

1. Use only the amount of protein required to repair the body. Use other and cheaper foods for body fuel.
2. Select those foods which supply the needed protein at the smallest cost.

How to do this will be shown in Part Two.

Body Fuels

The body fuels are fats and carbohydrates. (Protein may be used as body fuel, but should not be, since other fuels can be had at far less cost.)

Fats are found in meat, butter, milk, olive oil, cotton seed oil and, to a small extent, in corn and oats.

Carbohydrates are starches and sugars, and are found in grains, fruits and vegetables.

A man doing moderately light labor requires enough fuel food to produce about 4,000 calories of energy. (This term calories will be explained later.)

THE SECRET OF FUEL FOOD ECONOMY IS TO SELECT THOSE FOODS WHICH PROVIDE THE NEEDED AMOUNT OF FUEL AT THE LEAST COST. HOW TO DO THIS WILL BE SHOWN IN PART THREE.

It is most important to note that fuel foods can never take the place of repair foods in the ration. No matter how

THE HOME ECONOMY HANDBOOK

much fuel food a man eats, he will starve without repair foods—protein foods. His muscles will waste away for want of repairs. By a "balanced ration" is meant the proper amounts of both repair and fuel foods.

The Calory

Before we can judge the relative fuel values of the different foods, we must know what the calory is.

The calory is the unit for measuring energy, just as the pound is the unit of weight, and the dollar the unit of money.

Energy may be in either of two forms: heat or power (and may be changed from one to the other).

A calory of energy in the form of heat is that amount of heat necessary to raise one liter (about one pint) of water four degrees Fahrenheit.

Thus it takes 45 calories of heat to raise a pint of water from the freezing point to the boiling point.

A calory of energy in the form of power will raise one ton to a height of a little more than $1\frac{1}{2}$ feet (1.54 ft.). A calory of power will raise a pound to the height of 3,080 ft.

We have seen that a man at light work requires about $\frac{1}{5}$ lb. of protein and about 3,000 calories of fuel per day. A man at moderately heavy labor requires about .28 lb. of protein, and about 3,500 calories of fuel per day. The ration of a man doing heavy labor must provide $\frac{1}{3}$ lb. of protein and 4,000 calories of fuel.

COMPOSITION OF FOOD MATERIALS

At this point will be given a table showing the protein and fuel values of a large number of foods.

This table is very important, as by means of it we can make striking savings. It will be referred to constantly in the later pages of this book.

This table is absolutely reliable. It is compiled from various bulletins issued by the U. S. Department of Agriculture, and may be depended upon as correct.

Table 1—Composition of Food Materials

KIND OF FOOD Column 1	Protein Col. 2	Fat Col. 3	Carbo- hydrates Col. 4	Ash Col. 5	Water Col. 6	Fuel Value Calories per Pound Col. 7
Fats and Oils—						
Lard .....	.....	100.0	.....	.....	.....	4,080
Olive Oil .....	.....	100.0	.....	.....	.....	4,080
Cotton Seed Oil .....	.....	100.0	.....	.....	.....	4,080
Beef Suet	4.7	81.8	.....	0.3	13.2	3,510
Butter	1.0	85.0	.....	3.0	11.0	3,410
Bacon	9.4	67.4	.....	4.4	18.8	3,030
Milk and Cheese—						
Whole Milk	3.3	4.0	5.0	0.7	87.0	310
Skim Milk	3.4	0.3	5.1	0.7	90.5	165
Buttermilk	3.0	0.5	4.8	0.7	91.0	160
Cream	2.5	18.5	4.5	0.5	74.0	865
Cream Cheese	25.9	33.7	2.4	3.8	34.2	1,950
Cottage Cheese	20.9	1.0	4.3	1.8	72.0	510
Egg—						
Whole Egg	14.8	10.5	.....	1.0	73.7	700
White of Egg	13.0	0.2	.....	0.6	86.2	265
Yolk of Egg	16.1	33.3	.....	1.1	49.5	1,608
Meat—						
Lamb Chop	17.7	28.3	.....	1.0	53.1	1,540
Pork Chop	16.9	30.1	.....	1.0	52.0	1,580
Smoked Ham	16.1	38.8	.....	4.8	40.3	1,940
Beefsteak	18.6	18.5	.....	1.0	61.9	1,130
Dried Beef	30.0	6.6	.....	9.1	54.3	840
Fish—						
Cod (fresh)	15.8	0.4	.....	1.2	82.6	325
Salt Cod	21.5	0.3	.....	24.7	53.5	410
Oysters	6.2	1.2	3.7	2.0	86.9	235
Herring (smoked)	36.4	15.8	.....	13.2	34.6	1,355
Mackerel (fresh)	18.3	7.1	.....	1.2	73.4	645
Halibut (fresh)	15.3	4.4	.....	0.9	61.9	454
Salmon (fresh)	16.7	14.8	.....	0.9	57.9	903
Beans and Peas—						
Navy Bean	22.5	1.8	59.6	3.5	12.6	1,605
Soy Bean	34.0	16.8	33.7	4.7	10.8	1,970
Brown Bean	21.9	1.3	65.1	4.2	7.5	1,695
Cowpeas	24.6	1.0	62.0	2.9	9.5	1,655
Peanuts	23.8	38.6	24.4	2.0	9.2	2,560
Vegetables and Fruit—						
Corn (green)	3.1	1.1	19.7	0.7	75.4	500
Apple	0.4	0.5	14.0	0.3	84.6	290
Dried Fig	4.3	0.3	74.2	2.4	18.8	1,475
Strawberry	1.0	0.6	7.4	0.6	90.4	180
Banana	1.3	0.6	22.0	0.8	75.3	460
Potato	2.2	0.1	18.4	1.0	78.3	385
Onion	1.6	0.3	9.9	0.6	87.6	225
Parsnip	1.6	0.5	13.5	1.4	83.0	230
Celery	1.1	.....	3.4	1.0	94.5	85
Grapes	1.3	1.6	19.2	0.5	77.4	450
Raisins	2.6	3.3	76.1	3.4	14.6	1,605
Fruit Jelly .....	.....	.....	78.3	0.7	21.0	1,455
Grape Juice	0.2	.....	7.4	0.2	92.2	150
Nuts—						
Walnut	16.6	63.4	16.1	1.4	2.5	3,285
Chestnut	10.7	7.0	74.2	2.2	5.9	1,875
Peanut	25.8	38.6	24.4	2.0	9.2	2,560
Peanut Butter	29.3	46.5	17.1	5.0	2.1	2,825
Cocoanut	6.6	56.2	22.6	1.6	13.0	2,805
Shredded Cocoanut	6.3	57.4	31.5	1.3	3.5	3,125
Grains—						
Corn	10.0	4.3	73.4	1.5	10.8	1,800
Wheat	12.2	1.7	73.7	1.8	10.6	1,750
Buckwheat	10.0	2.2	73.2	2.0	12.6	1,600
Oats	11.8	5.0	69.2	3.0	11.0	1,720
Rice	8.0	2.0	77.0	1.0	12.0	1,720
Rye	12.2	1.5	73.9	1.9	10.5	1,750
Popcorn	11.2	5.2	71.4	1.5	10.7	1,710
Bread—						
White Bread	9.2	1.3	53.1	1.1	35.3	1,215
Whole Wheat Bread	9.7	0.9	49.7	1.3	38.4	1,140
Corn Bread	7.9	4.7	46.3	2.2	38.9	1,205
Macaroni (dry)	13.4	0.9	74.1	1.3	10.3	1,660
Sugar—						
White Sugar .....	.....	.....	100.0	.....	.....	1,860
Molasses	2.4	.....	69.3	3.2	25.1	1,290
Stick Candy .....	.....	.....	96.5	0.5	3.0	1,785
Maple Sugar .....	.....	.....	82.8	0.9	16.3	1,540
Honey	0.4	.....	81.2	0.2	18.2	1,520

Part Two

Cheap Protein Foods

We will now consider the cheap sources of protein, and we will see what remarkable savings can be made by using these foods instead of the commonly used protein foods.

By far the most costly element in our food is protein, and we may make a very great reduction in the cost of living by selecting those foods which supply the needed protein at the smallest cost.

Remember that a man at light labor must have about one-fifth of a pound of protein daily in order to repair the body.

Most people depend upon meat for the protein, but meat is a very costly food, and we can select foods which yield the needed amount of protein at a fraction of the cost of meat.

To help in this selection, a table is given showing the protein values of the different foods. (This table is built up from the figures in Table 1.)

Explanation of Table 2

In this table, column 1 gives the name of the food; column 2 gives the per cent of protein in this food; column 3 gives the average price of this food over a long term of years; column 4 tells how many thousandths of a pound of protein are contained in one cent's worth of this food at the price named in column 3.

Columns 5 and 6 are left blank, to be filled in by you. In column 5 write, in pencil, the present price of the various foods, and in column 6 write the amount of protein a cent will buy at the present price of the various foods.

THE HOME ECONOMY HANDBOOK

To get the figures for column 6, take the percentage of protein, shown in column 2, multiply this per cent by ten, and divide by the present price in cents per pound.

By changing the figures in the last two columns as the prices of the various foods change, you can keep your table up to date, and always be able to know what foods are the cheapest source of protein.

Table 2—Relative Protein Values of Foods

KIND OF FOOD	Protein	Protein for				
		Average Cost in Cents	1 Cent Pound	1/1000	Present Cost	Protein for 1 Cent
Smoked Herring	36.0	25.0	14.5	.....	.....	.....
Soy Beans	34.0	3.0	113.0	.....	.....	.....
Dried Beef	30.0	30.0	10.0	.....	.....	.....
Peanut Butter	29.3	25.0	11.7	.....	.....	.....
Peanuts	26.9	15.0	17.2	.....	.....	.....
Cream Cheese	25.9	22.0	11.8	.....	.....	.....
Cowpeas (dried)	24.6	4.0	61.0	.....	.....	.....
Navy Bean	22.5	6.0	37.5	.....	.....	.....
Salt Cod	21.5	16.0	13.4	.....	.....	.....
Cottage Cheese	21.0	12.0	17.4	.....	.....	.....
Beefsteak	18.6	17.0	10.9	.....	.....	.....
Mackerel (fresh)	18.3	18.0	10.2	.....	.....	.....
Lamb Chop	17.6	20.0	8.8	.....	.....	.....
Pork Chop	17.0	16.0	10.6	.....	.....	.....
Smoked Ham	16.1	18.0	8.9	.....	.....	.....
Salmon	16.7	15.0	11.0	.....	.....	.....
Fresh Cod	15.8	16.0	9.9	.....	.....	.....
Halibut	15.3	12.5	12.0	.....	.....	.....
Eggs	14.8	20.0	7.4	.....	.....	.....
Wheat	12.2	2.5	48.8	.....	.....	.....
Rye	12.0	3.0	40.7	.....	.....	.....
Oats	11.8	1.7	67.4	.....	.....	.....
Popcorn	11.2	10.0	11.2	.....	.....	.....
Corn	10.0	1.5	66.7	.....	.....	.....
Whole Wheat Bread.....	9.7	5.0	19.4	.....	.....	.....
Bacon	9.4	22.5	4.2	.....	.....	.....
White Bread	9.2	5.0	18.4	.....	.....	.....
Corn Bread	8.0	4.0	20.0	.....	.....	.....
Rice	8.0	10.0	8.0	.....	.....	.....
Cocoanut	6.3	19.0	3.3	.....	.....	.....
Oysters	6.2	20.0	3.1	.....	.....	.....
Beef Suet	4.7	12.0	3.9	.....	.....	.....
Skim Milk	3.4	2.5	13.6	.....	.....	.....
Whole Milk	3.3	4.0	8.2	.....	.....	.....
Green Corn	3.1	15.0	2.0	.....	.....	.....
Buttermilk	3.0	2.5	12.0	.....	.....	.....
Raisins	2.6	10.0	2.6	.....	.....	.....
Cream	2.5	25.0	1.0	.....	.....	.....
Molasses	2.4	6.3	3.8	.....	.....	.....
String Beans	2.3	10.0	23.0	.....	.....	.....
Potato	2.2	1.3	16.9	.....	.....	.....
Parsnips	1.6	3.0	5.3	.....	.....	.....
Onion	1.6	3.0	5.3	.....	.....	.....
Bananas	1.3	5.0	2.6	.....	.....	.....
Butter	1.0	37.0	0.3	.....	.....	.....
Apple	0.4	5.0	0.8	.....	.....	.....
Sugar	0.0	6.0	0.0	.....	.....	.....

THE HOME ECONOMY HANDBOOK

In this table the foods are arranged in order of their richness in protein, those having a high percentage of protein coming first. Note that wheat is eighteenth on the list. All those foods coming before wheat are known as high-protein or protein-rich foods. Wheat and those foods lower on the list, except milk, are low-protein foods. (Milk is considered high-protein. About 25% of the SOLID part of milk is protein.)

The protein-rich foods contain protein in concentrated form, and are chiefly valued because they furnish body repairs.

In the low-protein foods the protein is diluted with the fats and carbohydrates (body fuels) and if you depend upon them alone for the necessary protein your diet will be too bulky. Therefore about one-half of the protein ration should be taken in protein-rich foods. You will save money by taking the remainder in low-protein foods.

As you will see by referring to column 4 of Table 2, a cent spent for oats will buy 67/1000 pound of protein, while you get only about one-sixth as much protein in a cent's worth of beefsteak. (The best fuel foods are low-protein foods, and since fuel foods will be considered in Part 3, nothing further will be said of low-protein foods.)

Meat Substitutes

A word of caution should be said here about so-called meat substitutes. Now, meat is rich in protein, and a food can take the place of meat in the diet only if it, too, is protein-rich.

Preparing rice, or any other low-protein food so that it looks like meat doesn't make it a meat substitute—such foods cannot furnish the protein the body must have in order to keep in repair.

On the other hand, a protein-rich food is a true meat substitute, no matter what it looks like when served. If the food contains a large percentage of protein it will repair body waste, and is a meat substitute.

THE SOY BEAN

The remarkable soy bean is undoubtedly the cheapest source of protein to be found in all the world, and a saving of 3c to 25c per day per person can be made by using it to supply the protein ration, instead of other protein-rich foods.

The soy bean is a native of China, and in the Orient is the most important food, next to rice. It is eaten every day by rich and poor alike, and forms the chief source of protein for most of the population.

THE HOME ECONOMY HANDBOOK

It was only recently introduced into this country, and is hardly known yet, but is even now being imported by the ship-load. Produced in vast quantities by cheap Oriental labor, it sells at less than one-half the price of other beans.

This remarkable bean is more than one-third protein, and more than one-sixth fat. Refer to the fourth column of Table 2. You will see that one cent spent for soy beans will furnish 113/1000 of a pound of protein—nearly twice as much as the next cheapest protein food (peas), and more than ten times as much as beefsteak.

The following table compares soy beans with other common protein-rich foods. The sixth column shows the cost of the one-fifth pound of protein needed daily.

Note, in the last column, the remarkable saving to be made by the use of soy beans.

Table 3.—Saving by Use of Soy Beans.

FOOD	Usual Cost per Pound	Per Cent Protein	Food (1/1000 Pound)	Protein (1/1000 Pounds)	Cost of Daily Protein Ration	Saving by Using Soy Beans
Soy Bean	3c	34.0	340	113.0	1 1/2 c	
Eggs	20c	15.0	150	7.4	27 1/2 c	25 1/2 c
Pork Chops	16c	16.9	169	10.6	19c	17 1/2 c
Beefsteak	17c	18.6	186	11.0	18c	16 1/2 c
Cottage Cheese	12c	21.0	210	17.4	17 4/10 c	9 5/8 c
Navy Bean	6c	22.5	225	37.5	5 1/3 c	3 1/6 c

The soy bean is palatable as well as cheap, and we may save ourselves much money by using these beans extensively as a meat substitute.

How to Cook Soy Beans

Soy beans can be served in as large a variety of attractive ways as any other bean, and should be prepared in the same way, except that they require considerably longer to cook.

Flatulence—After eating beans many people experience what is known as flatulence, or the formation of gas in the intestines. This may be prevented if a small amount of soda and salt is added to the beans in cooking.

Below are given a number of recipes for cooking soy beans. These recipes may be used in cooking other beans, and cow peas. Likewise recipes given later for cooking cow peas may be used for cooking soy beans.

THE HOME ECONOMY HANDBOOK

Soy Bean Loaf

Place one pound of soy beans in a kettle with plenty of water. Flavor to taste. Boil until tender but unbroken (not less than six hours). Boil nearly dry, then drain and allow to cool.

When cold, put through food chopper or sieve. Stir in half a cupful of tomato or tomato catsup and one cupful of bread crumbs. Place in a greased pan and bake in a moderate oven for half an hour. Serve hot or cold.

Mock Meat Cakes

Soak half a cupful of soy beans over night; cook until tender (at least six hours). Drain the beans. Add equal parts of boiled potato, mash together, mixing thoroughly. Stir in half a cupful of grated cheese, half a cupful of fine bread crumbs (corn bread is good), one beaten egg, and one tablespoonful of bacon fat or lard. Season and allow to cool. Then shape into cakes, dip in corn meal, and fry.

Chili Con Carne

Cut one pound of round steak into small square pieces. Fry in hot fat until nicely browned. Then add cupful of boiling water. Cover, and stew until tender. Add three red peppers, chopped fine. Add two cupfuls cooked soy beans, one medium size onion chopped fine, one tablespoonful of flour, four cloves, and a teaspoonful of salt. Cook until gravy is of right consistency. Serve hot.

Baked Beans

One pound of beans, one-fourth pound of salt pork, one teaspoon of baking soda, two teaspoons of molasses, one teaspoon of mustard.

Wash the beans and soak them in cold water over night. Pour off the water and put beans in pot. Cover with cold water, add the soda, and cook gently until the beans are slightly softened. Pour off the water, mix the molasses and mustard with a pint of water, and pour this over the beans, adding more water if the beans are not covered. Place the pork upon the beans and cover the vessel. Bring to a boil. Then put in fireless cooker and leave for ten or twelve hours.

Baked beans require ten to twelve hours if cooked in a stove, but by using a fireless cooker the stove is used only thirty minutes—a wonderful saving.

THE HOME ECONOMY HANDBOOK

Bean Loaf

Mash two cupfuls of cooked beans, put through sieve, add one-half cup of grated cheese, salt and pepper, and enough bread crumbs to thicken enough to form into a roll. Lay in buttered tin, and bake in moderate oven. Baste with butter and water. Serve hot with tomato sauce.

Cheese and Bean Roast

One cup of grated cheese, one cup of mashed boiled beans, one cup of bread crumbs, two tablespoons or more of chopped onion, salt and pepper, three-fourths cup of water, juice of one-half lemon.

Cook onion in the butter and water until tender. Add beans, cheese and bread crumbs, salt and pepper, and the grated rind and juice of half a lemon. Turn into buttered baking dish. Cover with bread crumbs and dabs of butter and bake for twenty minutes. Very delicious.

Soy Bean Sandwiches

Mash thoroughly one cup of cold baked soy beans, add teaspoon of finely chopped onion, salad dressing or oil enough to moisten.

This makes a really delicious sandwich, and is more nourishing than a meat sandwich, at a fraction of the cost.

Bean Croquettes

Thoroughly mash one pint of boiled beans. Flavor to taste. Shape into croquettes. Dip in beaten egg, roll in crumbs or corn meal and fry as fish. Serve with tomato or horseradish sauce.

Mock Sausage

Mash one quart of boiled beans. Add slightly beaten egg, one-fourth teaspoonful of sage, salt and pepper. Place in saucepan over fire, stirring occasionally until well heated. Pour into a platter and allow to cool until you can form it with the hands to resemble small sausages. Dip in bread crumbs, and fry in deep fat, or in skillet.

Soy Bean Loaf

Mash one pint of beans, add one pint of cold corn meal mush and one-half pint of ground meat. Season to taste and mix thoroughly. Form into a loaf and bake in oven. Strips of bacon on this loaf will improve it.

THE HOME ECONOMY HANDBOOK

COWPEAS

Cowpeas, or field peas, which are really a kind of bean, are, next to soy beans, the cheapest source of protein to be found.

From 8c to 24c per day may be saved by using them instead of other protein-rich foods.

Cowpeas are chiefly used in the South, but are practically unknown in the North, where we use large quantities of higher priced beans.

The following table shows, in the last column, the remarkable savings that may be made by using cowpeas.

Table 4—Savings by Use of Cowpeas

FOOD	Usual Cost	Thousands				Cost of Protein Ration	Saving by Using Cowpeas
		Per Cent of Protein	Pound of Protein in 1 lb. of the Food	1c for 1c	1/1000 Pound		
Cowpeas	3c	21.4	214	7.1		3c	
Eggs	20c	15.0	150	7.4		27½ c	24½ c
Pork Chops	16c	16.9	169	10.6		19c	16c
Beefsteak	17c	18.6	186	11.0		18c	15c
Cottage Cheese	12c	21.0	210	17.4		11½ c	8½ c

Cooking Cowpeas

Cowpeas may be cooked the same ways as dried beans. Baked with salt pork or bacon they make an excellent dish resembling pork and beans, but with a distinctive flavor.

Cowpeas boiled with ham or bacon are also palatable dishes. Any of the recipes given for soy beans may be used.

Boiled and mashed through a colander, the peas form a foundation for numerous dishes. They may be creamed with milk and butter, like mashed potatoes; formed into croquettes with bread crumbs; minced with vegetables, milk, and seasonings, or made into soup.

Cowpeas and Rice

Boil one quart of cowpeas and a pint of rice separately and mix together when done. The rice should be seasoned after it is cooked. Bacon or a beef bone boiled with the peas adds a desirable flavor to the dish.

Baked Cowpeas

Cook one quart of cowpeas slowly in water until they begin to soften. This will require five or six hours. Put them into a bean pot, add one-half pound of salt pork, and a small onion cut up fine (or use instead of the onion one tablespoonful of molasses). Cover with water and bake slowly six or seven hours.

THE HOME ECONOMY HANDBOOK

Cowpea Soup

One tablespoonful of butter or pork fat; one tablespoonful of finely chopped onion; one stalk of celery, finely chopped; one cup of dry cowpeas; salt.

Soak the peas eight to ten hours in water enough to cover. Fry the vegetables in the butter, add the peas in the water in which they were soaked, and cook until the peas are tender. Put the mixture through a sieve and add water enough to bring to the consistency desired. Reheat. If this soup is thickened with one tablespoonful of flour mixed with a little water, the pea pulp will not sink.

Puree of Cowpeas

Soak one pint of dry cowpeas in cold water over night. Cook until soft, in just enough water to cover. Drain and pass through a sieve. Season with salt, pepper, one-half cupful of milk, a tablespoonful of butter or other fat, and two teaspoonfuls of brown sugar. Beat thoroughly, reheat, and serve like mashed potatoes.

Baked Cowpeas and Cheese

(Substitute for Meat Roll)

One tablespoon of butter; one tablespoon of finely chopped onion; one tablespoon of finely chopped sweet green pepper or celery; two cups of cooked cowpeas; one-half cup of grated cheese.

Press the peas through a sieve to remove the skins, and mix with the cheese. Cook the onion and pepper or celery in the butter, or other fat, being careful not to brown, and add them to the peas and cheese. Form the mixture into a roll, place on a buttered dish and cook in a moderate oven until brown, basting occasionally with butter or other fat and water. Serve hot or cold, like meat.

Remember that navy beans, brown beans, and soy beans may be used instead of cowpeas in these recipes, and that cowpeas may be used in recipes which call for navy beans, brown beans, or soy beans.

NAVY BEANS

The navy bean is another very cheap source of protein and from 6c to 22c per person may be saved daily by using the navy bean instead of other common sources of protein.

A cent spent for navy beans will provide more than three and one-half times as much protein as a cent spent for beefsteak.

THE HOME ECONOMY HANDBOOK

The following table compares the navy bean with other common protein-rich foods. The last column shows the remarkable savings that may be made by using navy beans instead of other protein foods.

Table 5—Saving by Use of Navy Beans

FOOD	Usual Cost	Percent of Protein	Protein for 1c 1/1000 Pound	Cost of Daily Protein Ration	Daily Saving by Beans Navy
Navy Beans	6c	22.5	37.5	5 1/3 c	.....
Eggs	20c	15	7.4	27 1/2 c	22c
Pork Chops	16c	16.9	10.6	19c	13 2/3 c
Beefsteak	17c	18.6	11	18c	12 2/3 c
Cottage Cheese	12c	21	17.4	11 1/2 c	6 1/6 c

These figures show what striking savings may be made by using beans for the protein food. Increasing the amount of beans consumed increases our savings. We may greatly increase our use of beans by serving them in a large variety of attractive and palatable ways.

In cooking navy beans, use any of the recipes given for cooking soy beans or cowpeas.

THE PEANUT

The peanut is another member of the bean family which can save you money.

One cent's worth of peanuts contains more than one and one-half times as much protein as one cent's worth of beef-steak. A day's ration of protein (one-fifth pound) can be had in peanuts for twelve cents, compared with 27c for eggs, 19c for pork chops, and 18c for beefsteak.

Peanut butter, which is simply finely ground peanuts, with perhaps a little oil added, may be made at home at a saving by using the special nut-butter blade supplied with most of the meat choppers.

SKIM MILK

Skim milk is one of the cheapest and best sources of protein to be found. What is said of skim milk is true also of buttermilk, since they contain practically the same food elements.

From 7c to 15c per day may be saved by each person by using skim milk instead of other common sources of protein. This is shown in the following table.

THE HOME ECONOMY HANDBOOK

Table 6—Saving by Use of Skim Milk

	Cost per Pound	Percent of Protein	Protein for 1c 1/1000	Cost of Daily Protein Ration	Daily Saving by Using Skim Milk
Skim Milk.....	2c	3.4	17	12c	.....
Beefsteak.....	17c	18.6	10.9	19c	7c
Pork Chops.....	16c	16.9	10.6	19c	7c
Ham	18c	16.1	8.9	22½c	10½c
Whole Milk.....	4c	3.3	8.2	24½c	12½c
Egg	20c	15	7.4	27½c	15½c

Since skim milk is such a cheap source of protein we may very greatly reduce the cost of living by using larger amounts of it, and we may very greatly increase our use of skim milk by making it palatable.

Skim milk can be made palatable by cooking it in combination with other foods, as in the making of bread, soups, and tasty desserts and puddings, and by fermenting the milk. How to do this is told below.

Remember: The protein value of a cup of skim milk and one egg are about the same.

MILK SOUPS

Milk soups can be given many and varied flavors, are easily made, and generally relished. Another point in their favor is that they make palatable combinations with large quantities of bread, which is itself one of the cheapest sources of body energy, or fuel.

The following is a sample of a milk soup, and many other varied soups may be made by following the general directions given, but using different flavorings.

Soup Recipe

One quart of spinach (4 ounces); one thin slice of onion; two slices of stale bread (2 ounces); one quart of skim milk.

Put the spinach and the onion through the meat chopper, following them by the bread, in order that there may be no waste. Put into a double boiler with the milk, and cook until the spinach is tender.

Milk and Cheese Soup

Three cups of milk, or part milk and part stock; one and one-half tablespoons flour; one cup of grated cheese; salt and paprika.

THE HOME ECONOMY HANDBOOK

Thicken the milk with the flour, cooking thoroughly. This is best done in a double boiler, with frequent stirrings. When ready to serve, add the cheese and the seasoning.

The protein in this soup is equal in amount to that in five-sixths of a pound of beef of average composition; its fuel value is higher than that of a pound of beef.

Milk and Vegetable Soup

One quart of skim milk; one cup or bread crumbs, or two large slices of stale bread; one small slice of onion; small amount of spinach or outer leaves of lettuce (not more than 4 ounces); salt.

Cut the vegetables into small pieces and cook with the bread crumbs in the milk in a double boiler. If a large quantity is being prepared for use in a school, for example, put the vegetables through a meat chopper. In this case slices of bread can be ground with the vegetables, in order to absorb the juice.

MILK IN BREAD AND CEREALS

Another profitable way in which to increase the use of skim milk is to use it instead of water in the cooking of bread and cereals.

Remember that a cup of skim milk contains about as much protein as there is in an egg.

Milk in Bread

Skim milk used in place of water in bread-making adds to each pound of bread about as much protein as there is in one egg.

In bread-making simply use any recipe, using milk instead of water. Many cooks prefer to allow the milk to sour and then use soda instead of baking powder.

Cereals Cooked in Milk

To cook a cupful of cereal in three cupfuls of skim milk instead of water adds about as much protein as is contained in three eggs.

In other words, this amount of cereal cooked in water, and three eggs, would be no more nourishing than the same amount of cereal cooked in skim milk.

THE HOME ECONOMY HANDBOOK

Another important point in favor of the cereal cooked in milk is that it requires very much less cream to make it palatable.

Milk Puddings

These dishes are very rich in protein, and very palatable as well. Here is a recipe for a good one:

One part of cereal (rice, oatmeal, or corn meal); one part of sugar; twelve parts, or more, of skim milk.

Boil down until the mixture is only about ten times as bulky as the cereal used. (If one cup of cereal is used, cook the mixture until there is about ten cups of it.) As the water evaporates the food becomes richer and richer in protein. The more milk is used the richer in protein the food will be. It may be served with stewed fruit or baked apples instead of cream.

Recipes for corn starch puddings and other cereal puddings are too well known to need attention here. The puddings will have a higher protein value if more milk is used, and boiled down to the desired amount.

Sour Milk

Sour milk, of course, has the same food value as sweet milk, and may be used largely in making bread.

FERMENTED MILKS

Fermenting offers a means of very greatly increasing the palatability of skim milk, and thus increasing the amount we can use.

The three most commonly used fermented milks are buttermilk, Kefir, and what is known as Bulgarian milk.

Real buttermilk is, of course, the milk left after cream is churned for butter. Before the cream is churned it is allowed to sour, and the acidity coagulates the casein in the milk. In churning this curd is broken up into very fine particles. Most of the buttermilk sold in cities is not real buttermilk, but is simply soured milk allowed to curdle, and then churned to break up the curd.

Since real buttermilk and skim milk are composed of almost exactly the same elements, the "artificial" buttermilk is the equal in every way of the real article.

Buttermilk is recommended by physicians in the treatment of intestinal disorders, and is in constant use in many hospitals.

THE HOME ECONOMY HANDBOOK

Buttermilk may be served in a variety of ways—plain, with sugar, or with sugar and lemon.

Bulgarian Milk

Perhaps the most palatable way in which skim milk can be served is in the form of Bulgarian milk. Bought ready made, it is expensive, but it can be made at home with but little trouble.

Bulgarian milk is thick enough to stand up on a spoon like partly melted ice cream, and tastes like buttermilk with rich cream.

It may be served plain, with sugar, or with sugar and lemon.

Preparation of Bulgarian Milk

To prepare Bulgarian milk secure a lump of the Bulgarian culture. Heat the milk to 110 degrees F. Allow to cool to 100 degrees F. (about blood warm). Place the culture in the milk and place the milk in a warm place until the milk is thick (this will require several hours). Remove the culture and place in another batch of milk, or in a small quantity of milk to preserve the culture.

A small amount of the culture will ferment a quart of milk a day, and the culture increases constantly, doubling itself every few days. One start is all you ever need to purchase.

If you are unable to procure the Bulgarian culture the publishers of the Home Economy Handbook will tell you where you can procure it. Enclose a self-addressed envelope, stamped, for your reply.

Kefir

Kefir is another of the very palatable fermented milks. Bought already prepared it is quite expensive, but it can be made at home at the cost of the skim milk.

1. Obtain buttermilk or prepare it as directed on page 21.
2. Add half a teaspoonful of sugar to a 6-ounce or 8-ounce bottle of boiled and cooled water. Add half a yeast cake to this sugar solution and set in a warm place over night. This yeast culture should be ready at the time the

THE HOME ECONOMY HANDBOOK

buttermilk is received, or if made at home, at the time it is curdled.

3. To each pint of the buttermilk, add two even teaspoonfuls of sugar.

4. Add the yeast culture to the buttermilk in the proportion of one teaspoonful to a quart of milk.

Mix thoroughly and bottle. The bottles should be very strong as sufficient gas pressure is sometimes generated to break ordinary bottles. The heavy bottles used for soda pop answer the purpose very well. They must be carefully cleaned and boiled or steamed before filling. Fill them full and stopper tightly, wiring or tying the stoppers securely in place.

6. Place in a cool place to ferment. If the fermentation is too active the kefir will have a yeasty taste and the curd is likely to become lumpy and filled with large gas bubbles. A temperature of 65° to 70° F. is right. The floor of a cool cellar is a convenient place.

The bottles should be shaken as often as may be necessary to keep the curd in a finely divided condition.

The finished product should be smooth and creamy, effervesce rapidly when poured from the bottle, and have the pleasant, acid taste of buttermilk, with the added sharpness caused by the gas.

Kefir two or three days old may have a yeasty taste, but if it has been properly made this will disappear in another day. It should be used when three to five days old, but if put on ice may be kept for a week or more.

Cottage Cheese

Cottage cheese is another very cheap source of protein. Cottage cheese at 12c per pound furnishes more than 50% more protein for each cent invested than beefsteak at 17c per pound.

For supplying protein one pound of cottage cheese equals $1\frac{1}{4}$ pounds of sirloin, $1\frac{1}{10}$ pounds of round steak, $1\frac{1}{2}$ pounds of chicken, $1\frac{1}{2}$ pounds of smoked ham, $1\frac{1}{3}$ pounds of veal, and $1\frac{1}{3}$ pounds of leg of lamb.

Therefore a saving of several cents per day can be made by using cottage cheese instead of these other protein foods.

THE HOME ECONOMY HANDBOOK

ECONOMY IN THE USE OF MEATS

We have seen how large savings may be made by using other protein-rich foods in place of meat. But no one cares to do without meat entirely, and since meat is one of the most expensive foods, it is important that it be bought and used to the best possible advantage.

The use of the information found in this chapter will enable you to make a very large saving in providing the required amount of meat.

Meat economy is secured in two ways:

1. By using the cheaper cuts of meat.
2. By using the fats, bone, and trimmings in meats, and by using the left-over cold meats.

USING THE CHEAPER CUTS OF MEAT

Recent experiments conducted by the U. S. Department of Agriculture show that all cuts of beef have about the same food value. These are the figures: Protein in brisket, 16%; in chuck rib, 19%; in flank, 20%; in porterhouse, 22%; in neck, 21%; in ribs, 18%; in round steak, 21%; in shank, 21%; in side, 19%. (See page 4 of Farmers' Bulletin No. 391 of the U. S. Department of Agriculture.) These experiments also show that the cheaper cuts are digested equally as well as the more expensive.

The chief difference between the cheaper and the more expensive cuts are not in their nutritive value, but in their texture (toughness) and flavor. This difference in texture and flavor accounts for the difference in price.

But both of these drawbacks to the cheaper cuts of meat may be removed by proper cooking. Tough meats can be made tender by proper cooking, and by proper cooking we can develop and improve the flavor of the cheaper cuts until they are but little, if any, less palatable than the expensive cuts.

MAKING TOUGH MEATS TENDER

Tough meats may be made tender in four ways:

1. Prolonged cooking at low heat.
2. Cooking in vinegar.
3. Pounding the meat.
4. Chopping the meat.

THE HOME ECONOMY HANDBOOK

1. PROLONGED COOKING AT LOW HEAT

All muscles consist of bundles of tiny fibres, or shreds. These under the microscope are seen to have the form of tubes.

The fibres are held together in bundles and groups by a thin membrane known as connective tissue. When this membrane, or connective tissue, is heated in water or steam it is changed into gelatin, which allows the fibres to fall apart.

This process goes on quickly if the meat is tender but more slowly if it is tough.

In the prolonged cooking care must be taken to keep the meat well below the boiling point. If the meat is boiled for a long time two things take place: First, the connective tissue is dissolved; second, the fibres themselves are hardened and shortened and thickened. The former is the thing to be especially desired, but the latter is not. When the meat is cooked well below the boiling point the connective tissues are dissolved and the fibres remain tender.

Good meat may be ruined if this important point is not observed.

2. COOKING IN VINEGAR

The connective tissue is also dissolved when soaked in acetic acid, and this is the acid found in vinegar, and which makes it sour.

For this reason it is possible to make tough meat tender by soaking in vinegar or vinegar and water.

Sour beef is a palatable dish. The recipe is given here:

Sour Beef

Cover a piece of beef with vinegar, or with half vinegar and half water, to which may be added sliced onion, bay leaves, a few mixed whole spice, and salt. Allow to stand a week in winter, or three or four days in summer; turn once a day and keep covered. When ready to cook, brown the meat in fat, strain the liquid over it and cook until tender. Thicken the gravy with flour.

Sour Beefsteak

Round steak may be cooked in water in which there is a little vinegar, or if the time is sufficient, it may be soaked for a few hours in vinegar and then cooked in a casserole or in some similar way, or it may be friend, or braized.

THE HOME ECONOMY HANDBOOK

3. POUNDED MEAT

Pounding meat before cooking is a very good way of making it tender, but while it has the advantage of breaking down the tough tissues it has the disadvantage of being likely to drive out the juices and with them the flavor. A very good way of escaping this difficulty is pounding flour into the meat. The flour catches and retains the juices. Below are given the recipes for two very palatable dishes in which this is done:

Steak Stew

Pound flour into both sides of a round steak, using as much flour as the meat will take up. Use a meat pounder or the edge of a heavy plate. Fry in drippings or other fat, then add water enough to cover it. Cover the dish tightly and allow to simmer for two hours or until tender. The gravy will be already thickened.

Spanish Steak

Take a piece of round steak weighing two pounds and about an inch thick; pound until thin, season with salt and Cayenne pepper, cover with a layer of bacon or salt pork, cut into thin slices, roll, and tie with a cord. Pour around it half a cupful of milk and half a cupful of water. Place in a covered baking dish and cook two hours, basting occasionally.

In place of the round steak in the two recipes given above, slices of cheaper and tougher cuts of beef may be used, but must be cooked longer.

CHOPPED MEAT

Chopping meat is one of the best ways to make tough and inexpensive meat tender. By chopping it we divide it finely and thus cut the connective tissue into small bits. Such meats have another advantage in that they may be cooked quickly and economically.

In broiling chopped meat the fact should be kept in mind that there is no reason why it should not be cooked like the best and most expensive tenderloin. The only reason

THE HOME ECONOMY HANDBOOK

that ever existed for difference in treatment was the toughness of the connective tissue, and this feature has been overcome by the chopping.

The ideal to be reached in broiling steak is to sear the surface very quickly, so that the juices which contain the greater part of the flavoring of the meat shall be kept in and then allow the heat to penetrate to the inside until the whole mass is cooked to the taste of the family.

To pass the point where the meat ceases to be puffy and juicy and becomes flat and hard is very undesirable, as the palatability is then lost.

Exactly the same ideal should be kept in mind in broiling chopped meat. If this were done hard, compact, tasteless balls or cakes of meat would be served less often.

To begin with, the broiler should be even more carefully greased than for a whole steak. This makes it possible to form the balls or cakes of chopped meat with very little pressure without running the risk of having them pulled to pieces by adhering to the wires of the broiler. They should be heated on both sides even more quickly than the whole steak, because the chopping has provided more ways of escape for the juices, and these openings should be sealed by searing as soon as possible. The interior should then be cooked to the taste of the family just as the steak is.

Chopped raw meat of almost any kind can be very quickly made into a savory dish by cooking it with water or with water and milk for a short time, then thickening with flour and butter, and adding different seasonings as relished, either pepper and salt alone, or onion juice, celery, or tomato.

Other forms of chopped meat are Hamburg steak and meat loaf.

We have seen that the cheaper cuts of meat have two disadvantages: toughness and lack of flavor. We have seen the four methods by which we can overcome the toughness. We shall now consider how we may overcome the lack of flavor.

THE HOME ECONOMY HANDBOOK

DEVELOPING AND IMPROVING THE FLAVOR OF MEAT

By careful cooking we can develop and improve the flavor of meats in these three ways:

1. Retaining the natural flavor.
2. Browning the meat.
3. Adding vegetables or other flavors to otherwise tasteless meats.

1. RETAINING THE NATURAL FLAVOR

It is extremely hard to retain the flavor-giving juices in a piece of meat so tough as to require prolonged cooking, but this may be accomplished by searing the exterior of the meat before cooking. This prevents the escape of the juices.

Searing may be done by plunging the meat into boiling water, holding it in a flame, or placing it in a hot oven.

2. BROWNED MEAT

Browning meat brings out flavors very agreeable to most people; outside slices of roast meat have this flavor to a marked degree. Aside from roasting, browning is usually accomplished by heating the meat in a frying pan in hot fat. Care should be taken that the fat is not scorched.

The meat can afterward be stewed, as in braised meat, or roasted.

The chief reason for the bad opinion in which fried food is held by many is that it almost always means eating burned fat. When fat is heated too high it splits up into fatty acids and glycerin, and from the glycerin is formed a substance (acrolein) which has a very irritating effect upon the mucous membrane. All will recall that the fumes of scorched fat make the eyes water. It is not surprising that such a substance, if taken into the stomach, should cause disturbance there and in the intestines. Fat in itself is a very valuable food, and there is reason for objection to it only if it is scorched.

3. ADDING VEGETABLE OR OTHER FLAVORS

The two methods just mentioned increase the flavor of the meat itself. There are countless ways of adding flavor to otherwise tasteless meat, using vegetables, herbs, and spices. Any cook book will give numerous recipes.

THE HOME ECONOMY HANDBOOK

The flavor of the meats to be seasoned will be much improved if the vegetables are fried in a little fat before being cooked with the meat. There is almost no limit to the number of savory combinations that may be made.

Braized Beef

Braising beef is an excellent method of bringing out the flavor of tough meat that must be made tender by cooking a long time.

Brown the meat, place in closely covered kettle with small quantity of water and flavoring vegetables, such as onion, carrot, etc. Cook until tender. Make lots of gravy. Browning the meat adds to the flavor. The slow cooking in water makes it tender.

Casserole Roast

Brown round or rump of beef in fat from a slice of fried pork. Place in casserole with chopped carrot, turnip, onion, celery, etc., around it. Add two cups of water or stock, cover and cook in hot oven three hours. Baste occasionally. (Instead of a casserole you can use a heavy dish covered with a plate.)

Having shown how meat economy can be secured by the use of the cheaper cuts of meat, we will now show how it can be secured by using the fats, bone, trimmings, and left-overs.

FATS

About one-fifth of all meat is pure fat—lard or tallow. Even round steak contains 10% of fat. The food value of this fat is equal to that of lard or butter. If the fat of the meat is not eaten at the table or eaten afterward a pecuniary loss results. The fats from all meat should be saved and used in place of lard and butter in cooking.

A double boiler is the best utensil to use in trying out small portions of fat. With this there is no danger of burning the fat. Pour boiling water over the fat. Boil thoroughly and set away to cool. The cold fat may be removed in a

THE HOME ECONOMY HANDBOOK

solid layer and the particles of meat clinging to the bottom of the cake may be scraped off.

BONES

Almost any meat bones can be used in making soup. If a little of the meat is left on, the soup is better.

Rib bones, if they have a little meat left on them, can be grilled or roasted into very palatable dishes. High-class restaurants serve spare ribs (pork ribs), and braised ribs of beef.

Marrow is a very valuable food. It can be removed from the bones after cooking and served on toast, or otherwise.

TRIMMINGS

Trimmings from meat can always be put to good use in the soup kettle, and they may be used in various dishes, such as meat pies, meat stews, hash, chopped meat, meat cakes, meat salads, or cooked with beans or other vegetables. They may be recooked, and combined with vegetables and pie crust, and other materials.

LEFT-OVERS

Left-over meat can be used in the ways mentioned above for meat trimmings, and many savory and delicious dishes made from it.

The number of tasty dishes which a good cook can make out of the meat trimmings and left-overs is almost endless. More of time and skill is required in cooking them than in cooking the expensive cuts of meat, but the real superiority of a good cook lies not so much in the cooking of fancy dishes as in preparing attractive dishes from the inexpensive foods.

Part Three

Cheap Fuel Foods

We have seen that we can save from five to 15 cents per day for each person by choosing the cheaper sources of protein, or repair foods.

We will now consider cheap sources of fuel food, and we will find that we can effect as great a saving here.

Remembering that the calory is the unit for measuring energy (heat and power) let us consider the following table, which gives the energy values of foods, arranged in order of their "cheapness" in energy, at ordinary prices.

Note that column 1 gives the name of the food; column 2 gives the number of calories per pound of the food; column 3 gives the usual prices for these foods; column 4 gives the number of calories a cent will buy at this price; column 5 is left blank for you to fill in, with pencil, the present prices of these foods; and from this you can fill in column 6 with the number of calories a cent will buy at the present prices. You calculate this by dividing the number of calories per pound in the food, as shown in column 2, by the present price per pound, as shown in column 5.

You should fill in these two columns, and keep them up to date, so that you will know at all times just what are the cheapest sources of energy.

THE HOME ECONOMY HANDBOOK

Table 7—Energy (Fuel) Values of Foods

KIND OF FOOD	Calories per Pound..	Usual Cost per Pound	Fuel Value Calories for 1c	Present Prices	Calories for 1c
Corn	1800	1.5c	1200	.....	.....
Oats	1720	1.7c	983	.....	.....
Wheat	1750	2.5c	700	.....	.....
Soy Beans	1970	3.0c	657	.....	.....
Buckwheat	1600	2.5c	640	.....	.....
Rye	1750	3.0c	583	.....	.....
Cowpeas	1655	4.0c	414	.....	.....
Granulated Sugar	1860	6.0c	310	.....	.....
Corn Bread	1205	4.0c	301	.....	.....
Potato	385	1.3c	296	.....	.....
Beef Suet	3510	12.0c	292	.....	.....
Navy Bean, dry	1605	6.0c	267	.....	.....
White Bread	1215	5.0c	243	.....	.....
Lard	4080	17.0c	240	.....	.....
Whole Wheat Bread	1140	5.0c	228	.....	.....
Molasses	1290	6.3c	205	.....	.....
Rice	1720	10.0c	172	.....	.....
Peanuts (shelled)	2560	15.0c	167	.....	.....
Shredded Cocoanut	3125	19.0c	164	.....	.....
Cocoanut (fresh)	2805	10.0c	280	.....	.....
Raisins	1605	10.0c	161	.....	.....
Bacon	3030	22.5c	135	.....	.....
Peanut Butter	2825	25.0c	113	.....	.....
Smoked Ham	1940	18.0c	108	.....	.....
Pork Chops	1580	16.0c	99	.....	.....
Banana	460	5.0c	92	.....	.....
Butter	3410	37.0c	92	.....	.....
Cream Cheese	1950	22.0c	89	.....	.....
Macaroni (dry)	1660	12.5c	133	.....	.....
Whole Milk	310	4.0c	78	.....	.....
Lamb Chops	1540	20.0c	77	.....	.....
Parsnips	230	3.0c	77	.....	.....
Onions	225	3.0c	75	.....	.....
Honey	1520	22.0c	69	.....	.....
Dried Fig	1475	22.0c	67	.....	.....
Maple Sugar	1540	23.0c	67	.....	.....
Beef Steak	1130	17.0c	67	.....	.....
Skim Milk	165	2.5c	66	.....	.....
Buttermilk	160	2.5c	64	.....	.....
Apple	290	5.0c	58	.....	.....
Cream	865	15.0c	58	.....	.....
Cottage Cheese	510	12.0c	43	.....	.....
Egg	700	20.0c	35	.....	.....
Grapes	450	20.0c	23	.....	.....
Codfish	325	16.0c	20	.....	.....
Oysters	235	20.0c	12	.....	.....
Salmon	903	15.0c	60	.....	.....
Halibut	454	12.0c	38	.....	.....

A man at moderately hard work requires about 3,000 calories of energy per day.

The most commonly used fuel foods are cereal breakfast foods, bread, lard, and potatoes. You can very greatly reduce the cost of the necessary fuel food by using the information contained on the following pages.

THE HOME ECONOMY HANDBOOK

BREAKFAST FOOD ECONOMY

The number and variety of cereal breakfast foods at present on the market are very large, and no class of foods is more extensively or ingeniously advertised.

Some astonishing and preposterous claims are made for them, some of them being advertised to contain more nourishment than the same weight of beef.

No class of foods varies so greatly in price, although all have about the same food value. A very great saving can be made by selecting the cheaper forms of the cereals.

The following table compares the various cereal breakfast foods. The figures are taken from Farmers' Bulletin No. 249 of the U. S. Department of Agriculture.

Table 8—Food Values of Cereals

KIND OF FOOD	Percent of Protein	Calories of Energy per Pound	Price per Pound	Calories for 1c	Number of Cents this Food to Provide the Necessary 3,000 Calories Daily
Oatmeal	16.1	1767	4c	442	7c
Oat Groats	16.1	1767	3c	589	5c
Whole Wheat	11.9	1750	2c	875	3½c
Rolled Wheat	10.2	1541	5c	308	10c
Flaked Wheat Crisped and Malted Ready to Eat.....	12.1	1526	11c	139	27c
Puffed Wheat	12.0	1760	60c	29	103c
Shredded Wheat.....	10.6	1521	12½c	122	24½c
Wheat, Crumbed and Malted like Grape Nuts.....	12.2	1623	13c	123	24c
Graham or Whole Wheat Flour	13.5	1670	4c	418	7c
Whole Barley.....	12.4	1570	2c	785	4c
Whole Corn	10.5	1800	1½c	1200	2½c
Puffed Corn	11.0	1820	60c	30	100c
Corn Meal.....	9.2	1662	3c	554	5½c
Corn Flakes.....	10.1	1734	13c	133	22½c
Whole Rice.....	6.9	1546	8c	193	15½c
Puffed Rice	6.2	1639	60c	26	115c
Bread	9.2	1215	5c	243	12½c

It is important to note that while the food value of the various cereal foods is very nearly the same, the price varies greatly, and the number of calories that can be bought for one cent ranges from 26 in puffed rice to 1,200 in corn.

A very large saving can be made by using those cereals that provide the largest number of calories for each cent invested.

THE HOME ECONOMY HANDBOOK

These cheaper cereal foods are oats, corn, and wheat, and oatmeal, cornmeal, and graham flour.

When you pay 15c for four ounces of puffed wheat or corn or rice, you are paying at the rate of 60c a pound, or \$36 a bushel, for grain that has no greater food value than the wheat or corn or oats that you get out of the store for \$1.00 to \$2.00 per bushel.

OAT GROATS

Many people prefer the crisp prepared breakfast cereals to mush made from oats, corn, or wheat.

A very satisfactory substitute for the high-priced prepared cereals, and a delicious dish, can be made at home from Oat Groats.

In the process of milling field oats into rolled oats, the oats are first hulled and then rolled. The whole hulled grains, before being rolled, are called oat groats. Your grocer can get them for you at less than the cost of rolled oats.

To prepare, put half a cupful of them in a skillet over a hot fire and puff them. After a few trials you will be able to puff them to twice their original size. After puffing them, pour them into a bread pan, and when enough have been puffed, roast them in the oven until they are a rich brown.

They may be served in either of two ways:

1. Whole, with sugar and cream, or milk.
2. Ground (in a coffee mill or hand mill), with sugar and milk.

If served ground, with milk, the oats absorb much of the milk and taste richer than when served whole, with cream.

Parched oat groats have a rich, nutty flavor, and are fully as palatable as the high-priced package cereals.

One pound, served with one quart of milk, supply as much protein and body fuel as one and one-half pounds of bread and four eggs, and cost less than one-third as much.

The remarkable saving that can be made by using parched oat groats instead of the high-priced prepared cereals is shown in the following table. Column 3 shows the cost

THE HOME ECONOMY HANDBOOK

of the 3,000 calories required daily, and column 4 shows the saving by using oat groats.

Table 9—Saving by Use of Oat Groats

KIND OF FOOD	Calories for 1c	Cost of 3,000 Calories	Saving by Use of Groats
Oat Groads	589	5.1c	.....
Shredded Wheat	122	24.6c	19.5
Wheat, Malted, Cooked and Crushed (like Grape Nuts)	123	24.5c	19.4
Puffed Wheat	29	103.6c	98.2
Corn Flakes	133	22.6c	17.5
Puffed Corn	30	100.0c	94.9
Bread	243	12.4c	7.3

Parched Wheat

Parched wheat ground fairly fine in a coffee mill or hand mill and served with sugar and milk makes a palatable breakfast food at even less cost than oat groats. Its use will result in striking savings. However, it is somewhat less palatable than oat groats.

The parched wheat can be boiled either whole, or coarsely ground, and served with sugar and cream, or milk.

Corn may be served in the same way as wheat.

Home Ground Wheat

Wheat ground at home in a hand mill makes a delicious breakfast cereal, and is low in cost compared with the other breakfast foods.

The wheat should first be washed until the water is clear, then spread on a cloth to dry before grinding.

It should be cooked for three hours at least, and is better cooked all day or night. Soaking for several hours will shorten the time of cooking. A fireless cooker will be a great aid in cooking this food.

Mush from Home Ground Wheat

Into a quart of hot or cold water put four level teaspoonsfuls of salt, then put in a cupful of coarsely ground wheat.

If the water is cold no stirring is necessary. The water should be heated gradually after the wheat is added. If the

THE HOME ECONOMY HANDBOOK

wheat is put into hot water, the mixture should be stirred until it is thickened a little.

If skim milk is used instead of water, the value of the dish is greatly increased. The use of a quart of skim milk, instead of a quart of water, will add about as much protein (the repair food) as there is in four eggs. It will not, of course, supply the fat which the eggs supply, but, on the other hand, it adds over one and one-half ounces of milk sugar and some other valuable mineral substances.

BREAD

Bread is the most commonly used energy food. But bread is relatively high in price, and other cereal foods provide the same energy at a much smaller cost.

The way to save bread is to eat more of the cereals (oats, corn, barley and wheat) in their simpler forms. Pound for pound, these are as nourishing as bread, and cost far less. We can make a very important saving by using them as bread substitutes.

Refer to column 5 of the table on page 33 and you will see that many other cereal foods provide more calories of energy for each cent invested than does bread.

One cent spent for bread will buy 243 calories, while the same amount spent for oatmeal will buy 442 calories, or nearly twice as much; while one cent spent for whole wheat will buy more than three times as much—875 calories.

There are three ways in which we may use more of the cereals in their cheaper form, thus saving bread.

1. By using more of the breakfast cereals.
2. By extending the flavor of meat into cereals cooked with meat.
3. By using special preparations of the whole cereals.

1. Using More Breakfast Cereals

Enough has already been said about breakfast cereals to show how to secure the greatest value for the money spent.

THE HOME ECONOMY HANDBOOK

Use these cheaper cereals as much as possible; they provide energy at a fraction of the cost of bread.

(Cold corn meal mush, sliced and fried crisply brown, makes a palatable substitute for bread, at less than half the cost.)

2. Extending the Flavor of Meat

By cooking with meat some of the preparations of the cereals we get a dish in which the meat flavor is extended through a large amount of material which would otherwise be lacking in palatability.

In this way we can very greatly increase the amount of the cheaper cereals that can be substituted for bread. Often no bread will be eaten.

(Cereal thus flavored does not make a meat substitute. It only makes starchy foods more palatable to increase their use as bread substitutes.)

Meat Pie

Boil a pound of any kind of meat with carrot or onion, then cut up. Mix with six or eight small potatoes, separately boiled and cut up. Put into a baking dish. For a crust take a cup of mashed potatoes, add ten tablespoonfuls of flour, a spoonful of shortening, and enough water to make a dough. Season to taste. Put the crust over the meat and potatoes, and bake twenty minutes in a hot oven.

Meat and Tomato Pie

Hash any kind of cold meat. If fresh tomatoes are used, peel and slice them. If canned tomatoes are used, drain off the liquid. Place a layer of tomato in a baking dish, then a layer of meat, and over the two sprinkle flour (or corn meal), pepper and salt; repeat until the dish is nearly full. Put in an extra layer of tomato and cover the whole with a layer of crust or bread crumbs. Boiled potatoes may be used with the meat. Bake thoroughly in a moderate oven.

Corn Meal Mash

Corn meal furnishes two and one-half times as much fuel per cent invested as does bread. Its use may be largely increased by combining with meat.

THE HOME ECONOMY HANDBOOK

Mush Flavored with Egg and Bacon

In one pan fry minced bacon. In another pan fry cold sliced corn meal mush. When the mush is crisply brown, scramble the mush and stir eggs into it. When the eggs are cooked, stir in the fried bacon, together with the bacon fat.

A small amount of eggs and bacon will flavor a large amount of the mush and make it so palatable that a large amount of it will be eaten.

This provides a hot bread more palatable and more nourishing than light bread, at less than half the cost.

Meal in Soup

Boil a soup bone or ham bone until the meat is tender. Mince the meat, add the soup, and for each quart of soup stir in $1\frac{1}{2}$ cups of corn meal. Cook thoroughly. When cool, fry crisply without grease, and serve alone or with eggs.

This hot bread has a delicious meaty flavor, and is very satisfying and nourishing.

Other cereals can be used in place of corn meal, with equally good results.

All kinds of meat scraps and beef or hog fat may be used in this way.

Hominy and Sausage

Take 4 cups boiled hominy. Add salt and pepper. Add 1 cup sausage meat. Mash together thoroughly. Form into cakes and fry as sausage.

Other chopped or ground meats can be used in the same way.

Meat Pie

Meat pies are one of the best ways in which to extend the flavor of meats. Bake in a fairly deep dish, the sides of which are lined with dough. Put into the dish the cooked meat, cut into small pieces. Add vegetables to suit. Pour a gravy over the meat. Cover with a layer of biscuit dough and bake.

Cheese Combination

Take two cups of boiled rice, hominy or cornmeal. Stir in three cups milk. Beat into this 2 beaten eggs and 1 cup grated cheese. Pour into buttered baking dish, dot top with

THE HOME ECONOMY HANDBOOK

butter, sprinkle with bread crumbs, and bake 20 or 30 minutes, until light brown.

Cheese Relish

Put 1 cup milk into double boiler. Salt and pepper to taste. When hot stir in 1 cup grated cheese, cook 5 minutes, add 3 crumbed crackers or crumbed slice bread. Serve on fried mush. This provides a very effective way to extend the flavor of cheese through a large amount of cereal.

SPECIAL PREPARATIONS OF WHOLE CEREALS

Good, clean whole wheat can be obtained everywhere at a moderate price. By "clean" is meant free from dirt and also free from other seeds, like those of weeds.

From whole wheat a number of valuable dishes can be made, and at a low cost compared with foods bought in stores.

Wheat contains all the elements of nutrition. It contains every one of the 16 chemical and mineral elements necessary to maintain life.

Whole wheat contains fibre and fatty substances which make it more laxative than white flour, and many of the common breakfast foods on the market. It corrects constipation. It contains the bran coat which is so useful in keeping the alimentary canal clean and healthy.

Dr. Wiley, the famous pure food specialist, says: "There is no better balanced ration in the shape of one simple food substance than is to be found in whole wheat. Especially when combined with milk you have practically a perfect ration."

It is possible to grind raw whole wheat in an ordinary coffee mill fine enough for use in bread making. This provides flour at less than half the cost otherwise paid. See page 35 for directions for cleaning the wheat.

Bread Made from Home Ground Wheat

3 cupfuls of wheat meal (or 2 cupfuls of wheat meal and 1 cupful of white flour).

1 $\frac{1}{4}$ cupfuls lukewarm water.

$\frac{1}{2}$ cake compressed yeast.

THE HOME ECONOMY HANDBOOK

1 level teaspoonful of sale

1 level teaspoonful of sugar.

1 tablespoonful of shortening (if desired).

Mix the yeast with a small amount of lukewarm water, dissolve the sugar and salt in the rest of the water, mix the two solutions and add all the meal (or meal and flour).

Mix thoroughly so that all the liquid is incorporated into the mass. Cover and set in a moderately warm place to rise.

After about 2 hours, or when well risen, add the shortening and knead well, adding a little meal, if necessary, until a smooth dough has been formed.

Cover and set aside again to rise for about 1 hour. Knead lightly, and form into loaves. Place in a greased pan and allow to rise until just double in bulk. (This is only two-thirds the usual rise in the pan when white bread is made.) Bake slowly for three-quarters of an hour.

Wheat Meal with Meat

The flavor of meat may be extended into this home ground wheat, the same as into corn meal, as described on page 38.

Parched Wheat

One way to make whole wheat attractive, especially to children, is to parch it. But this must be carefully done.

The wheat should be washed, then put, wet, into a skillet over a hot fire. Care must be taken that the wheat does not scorch.

If the fire is hot enough the wheat will "pop", the skin of every grain bursting. After this use less heat until the wheat is a rich golden brown; then pour into a dish and add butter. Parched wheat has a rich, nutty flavor, and is very palatable.

Parched wheat is especially beneficial to children. It supplies the crisp, coarse material that will make their teeth clean and strong; it is a certain cure for constipation, and it provides the important minerals and vitamines so largely lost in milling wheat into white flour.

Children who have all the parched wheat they want eat far less bread, to the benefit both of themselves and of your pocketbook.

THE HOME ECONOMY HANDBOOK

Carmelized Wheat

Another way to make parched wheat attractive is to carmelize it. Just before pouring it out of the skillet, sprinkle a small amount of sugar over it, stirring constantly. The heat will melt and brown the sugar, and the sugar will form a thin layer around the grains, and when the wheat is poured out the sugar will harden into a crisp coat, and you have a delicious food.

Hulless Barley

Hulless barley costs less than wheat, and has about the same food value. It may be parched and used the same as wheat.

When parched it swells up two or three times its natural size, and bursts the skin, almost like popcorn, and makes a very good substitute for popcorn. It has a rich, nutty flavor. The cost is less than $\frac{1}{4}$ that of popcorn.

Parched Corn

Corn may be parched the same as wheat and barley. In these parched grains we have an exceedingly cheap food—each pound of them equal to $1\frac{2}{5}$ lbs. of bread, at a fraction of the cost.

Cereal Coffee

Several substitutes for coffee are on the market, sold at various prices, but none of them cheap.

You can make your cereal coffee at home, at a small fraction of the cost of the commercial coffee substitutes.

Take any grain, or ground grain, and roast in the oven until dark brown; add two teaspoonfuls of molasses or sugar, to each pint of the cereal, and roast until very dark brown. A little experimenting will enable you to make a coffee substitute equal to any on the market.

In preparing this drink, it should be boiled from 15 to 30 minutes.

FATS

Fats are one of the important fuel foods. This chapter tells how you can save 2c or more per day for each grown member of your family in the use of fats (butter, lard, etc.).

THE HOME ECONOMY HANDBOOK

According to government reports the average man requires about 4 ounces ($\frac{1}{4}$ lb.) of fats per day. This costs, in ordinary times, from food sources commonly used, about 6 to 8 cents per day.

By using home made cooking compounds, directions for preparing which are given here, this cost can be reduced at least one-fourth. A further saving can be made by using other directions given here.

Reference to Table VII, on page 32, will show that all fats and oils, both vegetable and animal, contain about the same number of calories per pound, and according to government experts, they are equally healthful when of good quality.

LARD SUBSTITUTE

The most commonly used cooking fat is lard. Of late years lard has been largely supplanted by the widely advertised cooking compounds, like cottolene, cottosuet, and crisco. Many people prefer these, even though they cost more than lard.

You can make at home your own cooking compound, equally as good as the high priced commercial compounds, and having the same food values, at a cost less than half of the commercial compounds, and very much below the cost of lard.

When the commercial cooking compounds sell at 30c per lb., and when lard sells at 20c per lb., beef suet and cottonseed oil cost 12c to 15c per lb. Thus the home made compounds can be made at about half the cost of the commercial cooking compounds, or about three-fourths the cost of lard.

Home Made Cooking Compounds

Take equal parts of beef tallow and cottonseed oil, heat until melted, and mix thoroughly. Allow to cool, stirring occasionally while cooling to avoid the danger of the hard fat separating out of the oil. To make a softer product, use more oil—to make it harder, use more tallow. Mutton tallow can be used with equally good results. The same results can be had by adding the oil to the finely chopped beef suet or mutton fat, then rendering, as described on page 29.

This home made cooking compound is one of the cheapest fuel foods to be had, only the cereals being cheaper. A

THE HOME ECONOMY HANDBOOK

pound of it contains about 4,080 calories. At 15c per lb., this is at the rate of 272 calories for each cent invested. At ordinary prices, rice provides 172 calories, pork chops 199, bacon 135, lamb chops 77, and butter 92.

It is the truest economy to use as much of this as desired and save on butter, lard, and other fats.

MERGERS

Fortunes have been made by shrewd promoters in selling so-called "mergers" to the public, at prices ranging up to \$5.00. It is claimed by these promoters that by using the merger in making home made cooking compound the average family can save more than the cost of the merger every year.

This is undoubtedly true, but it is also true that the same results can be obtained without their high priced merger, by using common kitchen utensils.

The effect is obtained by stirring the compound as it cools, keeping it mixed, or "merged", and this can be done with a spoon as well as with an expensive "merger".

FATS HEALTHFUL FOODS

Some people consider fats hard to digest, but government experiments have shown that when fats cause digestive troubles it is due to one of three causes—

1. Eating too much fat;
2. Eating scorched fat;
3. Eating rancid fat.

When fat is overheated a chemical compound called acrolein is formed. This substance is especially irritating to the mucous membranes which line the eyes, nose throat, stomach and intestines. When fats are scorched, acrolein vapors are given off which cause the eyes to water. Scorched fat in the stomach and intestines may cause serious inflammation.

Experiments show that butter and lard scorch at lower temperatures than beef or mutton fat, and vegetable oils at higher than all. For this reason vegetable fats are preferable for frying, or deep frying, where hot fats are required.

The home made cooking compound described above is especially desirable for frying, for the reason that it can be heated very hot without scorching.

THE HOME ECONOMY HANDBOOK

HOW TO ECONOMIZE IN FRYING

In frying, all foods absorb some fat, and this increases their nutritive value. Up to a certain point this is advantageous, but an excess of fat soaked up by the food impairs the flavor and texture of the food, and is not only a waste, but may cause serious digestive troubles.

Experiments show that for each of the fats there is a certain temperature at which the food soaks up the least fat. For animal fats this is about 350 deg. F., and for vegetable fats (cottonseed and cocoanut oil) about 390 deg. F. For cooking compounds the temperature should be half way between, or about 370 deg. F. One-fourth more fat is soaked up if the fats are 20 degrees cooler.

A close idea of the temperature can be obtained by noting the time taken to brown a one-inch cube of bread completely immersed in the fat. Vegetable fats are at the best temperature for frying when the bread cube is cooked to a golden brown color in $\frac{1}{2}$ minute. Lard, beef fat, or mutton fat are best when the bread is cooked to a golden brown in 1 minute.

In pan frying, or shallow frying, the fats are best which scorch at high temperatures, compound being better than lard.

BEEF BRISKET FAT

The fat from beef brisket is much softer than that from other parts of the beef, and can be used in place of lard in shortening bread, and in any cakes in which the flavoring used masks the flavor of the meat. The cost of this fat is far lower than that of lard.

To Render Fat

Fat scraps contain more or less muscular or connective tissue. This should be removed by rendering before the fat is available for most cooking purposes.

A common method is to cut into small pieces and heat in an open kettle, until the fat is separated. Remove the scraps, or cracklings, by straining. The scraps may be used in shortening hot bread, and impart a very agreeable meaty flavor.

THE HOME ECONOMY HANDBOOK

A better way to render is to chop the scraps finely in a meat chopper. Heat in a double boiler until completely melted. Then strain through a thick cloth.

The advantage of this method is that since the meat is finely chopped, it may be rendered at a low temperature, so there is no danger of scorching. Also there is no disagreeable odor in the room during the process.

Clarifying

After the fat is rendered it must usually be clarified. Melt the fat with equal part of water. Heat for a few minutes near boiling point. Stir occasionally. Let cool, remove the layer of fat, and scrape off bits of meat and other material which may adhere to the under side.

Undesirable odors and flavors can be removed by heating with a good grade of charcoal—12 pieces the size of a walnut for each pound of fat. Heat in a double boiler, and allow the charcoal to remain two hours, stirring occasionally. Strain through flannel or other closely woven cloth to remove the particles of charcoal.

SAVORY FATS

Some people object to the odor of beef and mutton fats. Savory fats are fats to which have been added some strong seasoning material, such as sage, marjoram or thyme. The flavors present in these seasoning materials are taken up by the fats and mask the original flavors.

Recipe for Savory Fats

Chop fine 1 lb. of unrendered fat. Add teaspoonful thyme, teaspoonful marjoram, $\frac{1}{2}$ teaspoon rubbed sage, 1 teaspoon salt, $\frac{1}{8}$ teaspoon pepper. Render in a double boiler and strain through fine cloth.

Other recipes will suggest themselves. If the fat is already rendered, simply melt it and add the seasonings as above. Heat gently an hour, and strain.

Potato chips or French fried potatoes cooked in these fats will have no noticeable mutton or beef flavor.

Remember that the energy value of all fats is practically the same—that the difference in price is due to flavor and appearance.

Part Four—Appendix

A HOME MADE FIRELESS COOKER

Cooking experts are agreed that a fireless cooker is undoubtedly one of the greatest time saving and money saving devices that can be put into a kitchen.

Over a gas flame, or any other flame, heat is produced constantly, but is not retained. The fire must be kept going constantly, as the heat is lost as rapidly as the fire can create it. Only a very small part of the heat created is absorbed by the actual cooking process; all the rest is wasted fuel, for which you pay.

Once cooking has been thoroughly begun, it will continue as long as the heat is retained. The secret of heat retention is found in insulation; that is, placing the heated foods in a vessel surrounded by materials that will not allow the heat to escape.

Fireless cookers can be bought at prices ranging from \$15 to \$40, and experts are agreed that they will pay for themselves in a very few months.

However, if you do not care to invest that much money, a very satisfactory fireless cooker can be made at home at slight expense.

The dimensions given are for a 10-quart cooker. For a 4-quart cooker, subtract two inches from the dimensions given. It costs but little more to make a 10-quart cooker, but the small cooker will give better results for small quantities of food.

List of Materials Needed

1. A closely built box, 20 by 20 by 20 inches, inside
2. A lid to fit, and, if desired, hinges and a fastener.
3. A can, or well, of about 32-gauge galvanized iron, 12 in. in diameter and 12 in. deep, with bottom, but no top.
4. A flange, of the same material, with four edges turned up two inches; the flange to be 20 in. square after the edges are turned up. (This is to fit inside the box.) The flange to have a hole in center, with edge of hole burred down $\frac{1}{8}$ in. to fit snugly inside the can, or well,

THE HOME ECONOMY HANDBOOK

but not attached. The diameter of this hole in the flange must be $\frac{1}{4}$ inch less than the inside diameter of the can, or well. Your tinner will understand exactly what to do.

5. A cover to fit into burred opening in flange.
6. A cushion or pad of denim, 20 in. square and 4 in. thick, stuffed tightly with crumpled newspaper.
7. Ten sheets of asbestos paper, 16 in. square, and a strip of asbestos paper 12 in. wide and 4 yds. long. (Short strips to make up this length can be used.)
8. A soapstone disk about $1\frac{1}{2}$ in. thick and 10 in. in diameter, with small ring countersunk in center.
9. A quantity of newspapers.

How to Build the Cooker

For insulation, use newspapers. Crush single sheets between the hands. Pack a layer over the bottom of the box, pounding it in solidly with a heavy piece of wood. When the layer is 4 in. thick, finish it off as near level as possible.

Place the ten sheets of asbestos paper (16 in. square) on top of this layer of paper, in the center of the box.

Roll the long strip of asbestos paper around the well, tying it in place with string, and being careful that the lower edge of the paper comes to the bottom of the well.

Then stand the well in the center of the box and pack more paper about it as solidly as possible. To make sure that the well is in the center, slip the flange down in the box, and make the well fit into the round collar on the flange. Pack some paper in around the well, and try the flange again, and continue this until the well is firmly fixed in the center.

The paper packing should come to the top of the well, and be finished off level all around. Pack down carefully, so that it will not later settle.

Take the square flange and slip it down in the box, and make the collar on the hole fit down over the well. The flange may be tacked into the box by driving light nails into each corner of the turned-up edges. Do not fasten it securely, as you may want to take it off. A carpet tack in each corner will be sufficient.

The cover that fits into the opening in the flange goes in, and then the cushion stuffed with crumpled paper. This cushion should be kept full enough to take up all the space between the flange and the lid of the box.

THE HOME ECONOMY HANDBOOK

You now have a fireless cooker that will give results as good as any on the market, and it has cost you but a small fraction of the cost of one you would purchase.

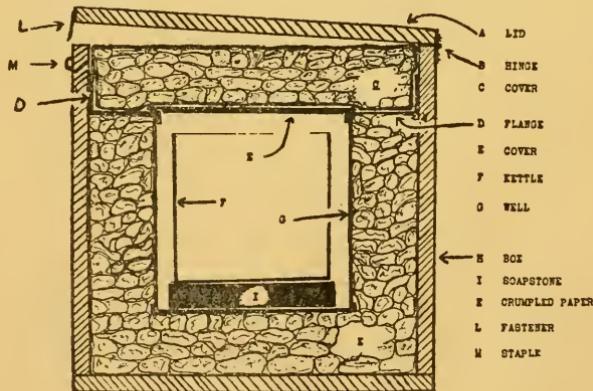
The cooking kettles may be tin buckets or earthen jars, or other kitchen utensils. Kettles made especially for use in fireless cookers can be bought for a small amount.

In using the cooker, start the food as in ordinary cooking, bringing the food to a boil in the kettles. Heat the soapstone disc, place it in the bottom of the well, place the kettle on top of this, and cover with the lid and the cushion.

Do not try to cook small amounts of food in large kettles in the cooker. If a large kettle must be used, fill up the vacant space with something that holds heat well, like a bottle of hot water. Or put the food into a small kettle, and put the small kettle into the larger, filling up with hot water.

Do not open the cooker until the food is cooked. The food will not burn if left in a long time.

A little practice will enable you to get first class results from your cooker, and you will save much time and money by using it.



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